

In the Claims

A complete listing of the claims follows immediately hereinafter.

1-39. (canceled)

40. (currently amended) In a system for tracking the position of a boring tool in the ground as the boring tool moves along an underground path which lies within a region, said boring tool including means for transmitting an electromagnetic locating signal and said system including an above ground arrangement for receiving the electromagnetic locating signal, an improvement comprising the steps of:

[[a]] providing at least two above ground detectors, each of which is configured for receiving said locating signal;

[[b]] locating said detectors at initial positions in said region within range of said electromagnetic locating signal transmitted from the boring tool at its initial position, said detectors including tilt sensors for measuring the tilt angles of each detector such that the tilt angles of each detector form part of said certain information;

[[c]] providing transmitter means forming one part of at least a first one of said detectors for transmitting a relative locating signal to other detectors in a setup mode;

[[d]] receiving said relative locating signal using a second one of said detectors in said setup mode; and

[[e]] determining the position of the second detector relative to the first detector based on the received relative locating signal

receiving said electromagnetic locating signal in a predetermined way using said first and second detectors to produce electromagnetic data; and

establishing initial absolute positions of said detectors and said boring tool within said region using certain information including the electromagnetic data and said tilt angles in conjunction with the relative position established between the detectors

moving one of said detectors to a new, unknown location while the other detector remains in its initial, known position; and

transmitting said relative locating signal to establish the new location of the moved detector relative to the other detector so as to also establish the absolute position of the moved detector in said region.

41-43. (canceled)

44. (currently amended) The improvement according to Claim [[43]] 40 wherein the moved detector is at least initially out of range of the electromagnetic locating signal at its new location such that a predetermined amount of additional advance of the boring tool causes the moved detector and the other detector to both be in range of said electromagnetic locating signal.

45. (original) The improvement according to Claim 44 wherein the new location of the moved detector is established in proximity to an anticipated drilling path of the boring tool.

46. (original) The improvement according to Claim 44 wherein the moved detector was out of range of the electromagnetic locating signal, prior to being moved from its initial position, as a result of advance of the boring tool and wherein the moved detector is within range of the electromagnetic locating signal, after being moved, such that the moved detector remains within range of the boring tool over a subsequent advance of the boring tool.

47. (currently amended) The improvement according to Claim 44 wherein sufficient additional advance of the boring tool along said anticipated drilling path causes the other detector to be out of range of the electromagnetic locating signal while the moved detector is in range and wherein said improvement further comprises the steps of:

[[i]] moving the other detector to an advance location farther from said boring tool, but still in proximity to said anticipated drilling path;

[[j]] transmitting said relative locating signal to establish the advance location of the other detector relative to the moved detector so as to also establish the absolute position of the other detector at the advance position in said region such that both detectors are again within range of the boring tool to receive the electromagnetic locating signal over further advance of the boring tool.

48-71. (canceled)